

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

CLAIM 1 (CURRENTLY AMENDED): A process for separating difluoromethane (HFC-32) from at least one halocarbon of a first mixture comprising difluoromethane (HFC-32) and halocarbon selected from the group consisting of dichlorodifluoromethane (CFC-12), 1,1,1-trifluoroethane (HFC-143a), chloropentafluoroethane (CFC-115), and pentafluoroethane (HFC-125), comprising the steps of:

contacting the first mixture with an extractive agent selected from the group consisting of:

hydrocarbon extractive agents consisting of hydrocarbons having from 5 to 9 carbon atoms and having a normal boiling point greater than about 30°C and less than about 155°C,

oxygen-containing extractive agents consisting of alcohols having a normal boiling point greater than about 60°C and less than about 100°C and represented by the formula  $C_xH_{2x+1}OH$ , wherein x is from 1 to 3, and ketones having a normal boiling point greater than about 50°C and less than about 110°C and represented by the formula  $C_yH_{2y+1}COC_zH_{2z+1}$ , wherein y and z are 1 or greater and y+z is at most 5, and

chlorocarbon extractive agents consisting of chlorocarbons having a normal boiling point greater than about 39°C and less than about 150°C and represented by the formula  $C_sH_{2s+2-t}Cl_t$ , wherein s is 1 or 2 and t is from 2 to 4 to form a second mixture,

separating difluoromethane (HFC-32) from said at least one halocarbon of the second mixture by ~~extractively~~ distilling the second mixture, and

recovering difluoromethane (HFC-32) substantially free of said at least one halocarbon, and recovering said extractive agent, with the proviso that when the halocarbon is pentafluoroethane (HFC-125), the chlorocarbon extractive agent may not be methylene chloride and when the halocarbon is 1,1,1-trifluoroethane (HFC-143a), the extractive agent may not be an alcohol.

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CLAIM 2 (ORIGINAL): The process of Claim 1 wherein the hydrocarbon extractive agent is selected from the group consisting of hydrocarbons having 5 to 7 carbon atoms and having a normal boiling point greater than about 30°C and less than about 110°C.

CLAIM 3 (ORIGINAL): The process of Claim 2 wherein the hydrocarbon extractive agent is selected from the group consisting of n-pentane, 2-methylpentane, 3-methylpentane, cyclopentane, methylcyclopentane, n-hexane, cyclohexane and n-heptane.

CLAIM 4 (ORIGINAL): The process of Claim 1 wherein the oxygen-containing extractive agent is selected from the group consisting of methanol, ethanol, propanol, iso-propanol, propanone, and butanone.

CLAIM 5 (ORIGINAL): The process of Claim 1 wherein the chlorocarbon extractive agent is methylene chloride.

CLAIM 6 (ORIGINAL): The process of Claim 1 wherein the difluoromethane (HFC-32) recovered from the second mixture contains less than about 50 ppmw halocarbon.

CLAIM 7 (ORIGINAL): The process of Claim 1 wherein the difluoromethane (HFC-32) recovered from the second mixture contains less than about 0.1 ppmw halocarbon.

CLAIM 8 (CURRENTLY AMENDED): The process of claim 1 further comprising recycling at least a portion of the said recovered extractive agent ~~obtained from the extractive distillation of said separation step for use in preparation of the second mixture of to~~ said contacting step.

CLAIM 9 (CURRENTLY AMENDED): The process of Claim 1 wherein ~~the extractive distillation~~ said separating step is performed at a pressure from about 15 to 350 psia.

CLAIM 10 (CURRENTLY AMENDED): The process of Claim 1 wherein ~~the extractive distillation~~ said separating step is performed using a reflux ratio of from about 1/1 to about 10/1.

CLAIM 11 (ORIGINAL): The process of Claim 1 wherein the difluoromethane (HFC-32) and halocarbon of the first mixture are an azeotropic composition.



CLAIM 12 (NEW): A process for separating a first mixture comprising difluoromethane (HFC-32) and 1,1,1-trifluoroethane (HFC-143a), comprising the steps of:

contacting said first mixture with an extractive agent selected from the group consisting of:

hydrocarbon extractive agents selected from hydrocarbons having from 5 to 9 carbon atoms and having a normal boiling point greater than about 30°C and less than about 155°C,

ketones having a normal boiling point greater than about 50°C and less than about 110°C and represented by the formula  $C_yH_{2y+1}COC_zH_{2z+1}$ , wherein y and z are 1 or greater and y+z is at most 5, and

chlorocarbon extractive agents consisting of chlorocarbons having a normal boiling point greater than about 39°C and less than about 150°C and represented by the formula  $C_sH_{2s+2-t}Cl_t$ , wherein s is 1 or 2 and t is from 2 to 4 to form a second mixture,

distilling said second mixture and thereby separating the difluoromethane (HFC-32) from the 1,1,1-trifluoroethane (HFC-143a), and

recovering difluoromethane (HFC-32) substantially free of 1,1,1-trifluoroethane (HFC-143a).